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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,443	08/19/2003	Kanwal K. Raina	MICRON.111C1	7029
20995	7590	12/01/2004	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			ROY, SIKHA	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2879	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,443

Applicant(s)

RAINA ET AL.

Examiner

Sikha Roy

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10, 13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 10, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 5 and 8 is/are rejected.
- 7) ☒ Claim(s) 6, 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The Amendment, filed on October 18, 2004 has been entered and is acknowledged by the Examiner.

Cancellation of claims 9,11 and 12 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,902,650 to Feng et al. and further in view of U.S. Patent 6,019,657 to Chakvorty et al.

Referring to claim 5 Feng discloses (Fig. 2 column 5 lines 30-40) a field emission display device 50 comprising a substrate 54, a conductive layer 62 over the substrate, covered by a resistive layer 52 of amorphous silicon doped with nitrogen and phosphorus (column 6 lines 31-40), a dielectric layer 56 over the resistor layer and a gate electrode (metal layer) 58 on the dielectric layer. Regarding the conductive layer being diffusion-resistant the examiner notes that resisting diffusion is inherent to the conductive layer (cathodic structure) 62 covered by nitrogen and phosphorus doped amorphous silicon.

The recitation of 'the amorphous silicon resistor layer doped with nitrogen and phosphorus in sufficient concentration to prevent diffusion of silicon' has not been given patentable weight because is considered an intended use recitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ 2d 1647 (1987).

Claim 5 differs from Feng in that Feng does not exemplify the bi-layer conductive layer.

Chakvorty in the same field of endeavor discloses (Fig. 1C column 5 lines 50-61, column 7 lines 47,48 and column 8 lines 20-28) the bi-layer cathodic structure including aluminum layer 103 with a cladding layer 104 of chromium. Further it is noted that the use of cladding layer prevents significant inter-diffusion of aluminum and makes good electrical contact with the overlying resistor layer.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use the bi-layer cathode structure of aluminum layer overlain by chromium layer as taught by Chakvorty et al. for the conductive layer of Feng for preventing diffusion of aluminum in the overlying resistor layer.

Regarding claim 8 Feng and Chakvorty disclose the bi-layer comprising chromium layer and aluminum layer.

Allowable Subject Matter

Claims 1-4, 10, 13 and 14 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1 and 10 the prior art of record neither teaches nor suggests the resistive structure having all the limitations as claimed in claims 1 and 10 and particularly the limitation of nitrogen and phosphorus doped amorphous silicon having 5 and 15 atomic percent of nitrogen and 1×10^{20} to 5×10^{20} atoms/cm³ of phosphorus.

Claims 2-4 and 13,14 are allowed because of their dependency status from claims 1 and 10 respectively.

Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 6 the prior art of record neither teaches nor suggests the resistive structure having all the limitations as claimed and particularly the limitation of nitrogen and phosphorus doped amorphous silicon having 5 and 15 atomic percent of nitrogen.

Regarding claim 7 the prior art of record neither teaches nor suggests the resistive structure having all the limitations as claimed and particularly the limitation of nitrogen and phosphorus doped amorphous silicon having 1×10^{20} to 5×10^{20} atoms/cm³ of phosphorus.

Response to Arguments

Applicant's arguments, filed October 18, 2004, with respect to claims 1 and 10 have been fully considered and are persuasive. The rejection of claims 1 and 10 has been withdrawn.

Applicant's arguments with respect to claim 5 have been fully considered but they are not persuasive.

In response to applicant's argument that the prior art of record does not teach or suggest a resistor layer doped with nitrogen and phosphorus in concentration sufficient to prevent diffusion of silicon out of the resistor layer, the Examiner respectfully submits that this recitation of 'the amorphous silicon resistor layer doped with nitrogen and phosphorus in sufficient concentration to prevent diffusion of silicon' is considered an intended use recitation and hence has not been given patentable weight. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ 2d 1647 (1987).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2879

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879

Joseph Williams
Joseph Williams